SCIENTIFIC LETTER

Undertreatment of coronary heart disease in patients undergoing coronary artery bypass surgery

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It is well recognised that patients with coronary heart disease who take antiplatelet, lipid lowering, and blood pressure lowering medications derive substantial benefits in reducing the risk of a major cardiovascular event. Many patients who have coronary heart disease undergo revascularisation by coronary artery bypass surgery (CABG) or angioplasty, but this in itself does not treat the underlying disease process. There is a concern that patients undergoing coronary artery revascularisation may be undertreated with effective drugs.[1] We conducted a study to examine the use of medical treatments by patients undergoing CABG or angioplasty to see whether they were receiving adequate preventive medical treatment.

METHODS

We reviewed the discharge medication charts of all patients with coronary heart disease admitted to a tertiary referral centre in the south of England for either CABG or angioplasty over a six month period between October 2002 and March 2003. The proportions of patients prescribed various combinations of drug treatment used in secondary prevention on discharge were determined. Differences between groups were considered significant at $p < 0.05$, calculated by Pearson's χ^2 with Stata software (StataCorp, College Station, Texas, USA).

RESULTS

Table 1 summarises the results of the 757 patients treated during the study period (mean age 62, 75% men). All categories and combinations of appropriate drug treatment were prescribed more commonly to angioplasty than to surgically treated patients (table 1). In some cases, particularly where combinations of drug treatments were compared, the differences were substantial.

DISCUSSION

The use of combination drug treatment to reduce multiple risk factors, with aspirin, a statin, and one or more blood pressure lowering treatments, can be justified for all patients with coronary heart disease with the potential to reduce the risk of a recurrent coronary heart disease event by about 80%.[2 3] Our results indicate an underuse of this effective combination by such patients. Patients who had undergone CABG were substantially undertreated: the combination of aspirin, a statin, and two or more blood pressure lowering drugs was taken by only 10% of these patients compared with over 60% of angioplasty treated patients ($p < 0.001$). The difference in use of angiotensin converting enzyme (ACE) inhibitors and β blockers was notable: the rate of use among patients who had undergone CABG (24% taking ACE inhibitors and 37% β blockers at hospital discharge) was less than half that of patients who had undergone angioplasty (59% and 78%, respectively, $p < 0.001$ for both). Clinical difficulty with hypotension in the immediate postoperative period may have restricted the use of blood pressure lowering drugs by some patients undergoing CABG. Confounding by co-morbidities such a impaired left ventricular or renal function may also account for part of the observed difference between surgical and angioplasty patients, although so large a difference in drug treatment at the time of hospital discharge is unlikely to be explained by this or by contraindications to and adverse effects of blood pressure lowering drugs (which arise in no more than about 10% of patients).[3]

Reflecting a single centre experience, our results may not be generalisable to wider clinical practice, but they are consistent with those from two other studies: a study of 386 patients in another cardiac centre in the UK where 11% of patients were taking an ACE inhibitor and 36% a β blocker at hospital discharge after CABG[4]; and in a French study of 1486 patients of whom 40% were prescribed an ACE inhibitor and 75% a β blocker after angioplasty.[5] In the EUROASPIRE II (the second European action on secondary prevention through intervention to reduce events) survey, across 15 European countries, fewer of the patients who had undergone CABG than those who had undergone angioplasty were prescribed drugs (β blockers, 55% *v* 70%; ACE inhibitors, 30% *v* 38%; and lipid lowering drugs, 39% *v* 51%).[1] If our results are representative, then this indicates severe undertreatment of a recognised high risk group of patients. In the UK alone, about 25 000 patients undergo CABG each year and may be lacking in effective medical preventive treatment.

Our results possibly reflect a misconception that surgical revascularisation procedures are therapeutically sufficient; that once the main lesion in the coronary artery has been treated, the need for long term preventive drug treatment is lessened or removed. They may also partly reflect a tendency

Table 1 Characteristics of patients undergoing two treatment strategies for coronary heart disease

	Treatment strategy		
	CABG	Angioplasty	p Value
Number	270	487	
Mean age (years)	65	62	
Men	217 (80%)	352 (72%)	
Medication			
Antiplatelet (aspirin)	236 (87%)	482 (99%)	<0.05
Lipid lowering (statin)	235 (87%)	447 (92%)	NS
BP lowering (ACE inhibitor)	64 (24%)	286 (59%)	<0.001
Angiotensin II receptor blocker	5 (2%)	34 (7%)	NS
β Blocker	99 (37%)	379 (78%)	<0.001
Calcium channel blocker	30 (11%)	49 (34%)	NS
Thiazide diuretic	1 (<1%)	33 (7%)	NS
Combinations			
Antiplatelet, statin at least	219 (81%)	447 (92%)	<0.05
Antiplatelet, statin, ⩾1 BP lowering	131 (49%)	433 (90%)	<0.001
Antiplatelet, statin, ⩾2 BP lowering	26 (10%)	321 (66%)	<0.001
Antiplatelet, statin, ⩾3 BP lowering	1 (<1)	65 (13)	<0.001

ACE, angiotensin converting enzyme; BP, blood pressure; CABG, coronary artery bypass surgery; NS, not significant.

to discontinue medication, regarded as unnecessary around the perioperative period, that is not later restarted.[4]

Atherosclerosis is a chronic progressive disease and, while surgical revascularisation can improve a patient's clinical condition, the consequences of subsequent disease progression should be recognised and patients should be offered all available preventive measures to reduce heart attack, stroke, and other cardiovascular events.

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IMAGES IN CARDIOLOGY

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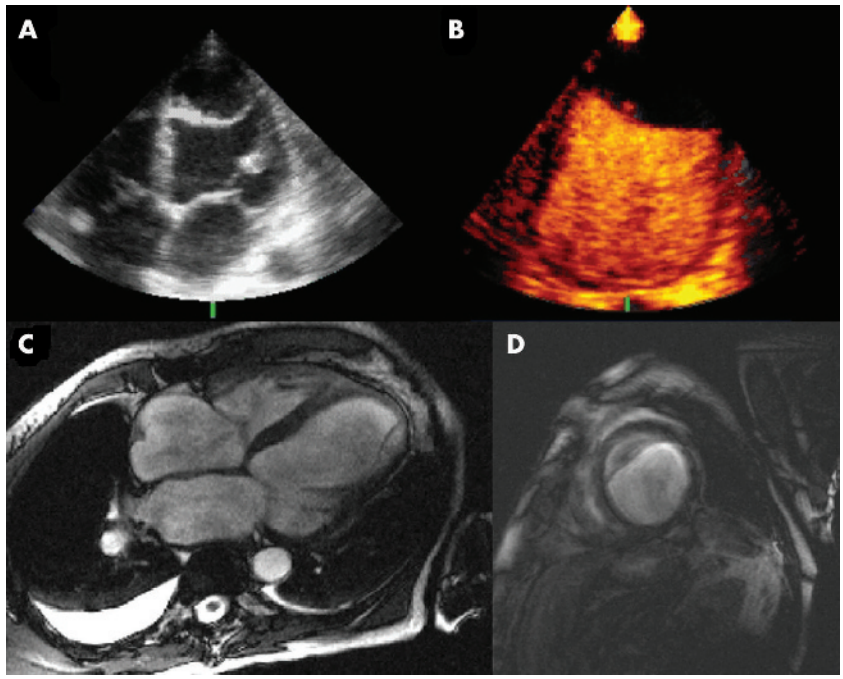
Intramyocardial dissecting haemorrhage and multiple left ventricular thrombus formations in subacute myocardial infarction and antiphospholipid syndrome

A 68 year old man was admitted complaining of chest discomfort and severe dyspnoea. During the preceding month he was admitted to a neurological department with a generalised epileptic crisis. Brain magnetic resonance imaging (MRI) demonstrated ischaemic lesions in the region of the right medial cerebral artery.

Clinical evaluation revealed signs of biventricular heart failure. An ECG showed sinus rhythm and left bundle branch block. Laboratory evaluation was notable for a positive antiphospholipid syndrome (anticardiolipin antibodies and lupus anticoagulants positive), and revealed also the following pathological findings: platelets 62 000/mm^3; international normalised ratio (INR) 1.7; creatine kinase (CK) 461 U/l; CK-MB 115 U/l; troponin T 0.03 µg/l; factor VIII 399%. Transthoracic echocardiography (TTE) showed left ventricular (LV) enlargement, severe dysfunction, and spontaneous echo contrast; a large echo-free neocavitation involving the LV apex, clearly delimited by endocardium towards the middle portion of ventricular cavity, was detected. In the basal inferior wall a thrombus formation was seen. Myocardial contrast echocardiography demonstrated no opacification in the apical neocavitation with incomplete perfusion of the endomyocardial border (panels A and B). These findings suggested an intramyocardial dissecting haemorrhage formed after subacute myocardial infarction. Further assessment was performed using cardiac MRI and confirmed the diagnosis of an apical intramyocardial haematoma (panels C and D).

The patient underwent coronary angiography that revealed severe three coronary vessel disease, indicating the need for coronary artery bypass graft surgery. Follow up showed spontaneous retraction of the dissecting haematoma and persistent basal thrombus. The pre-surgery TTE revealed recent thrombus formations in the left ventricle, despite intravenous heparin treatment. Heart surgery was performed and the patient was subsequently discharged.



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